APPENDIX A

CORRECTIONS FOR THE PREFLIGHT STUDY MANUAL (FIRST PRINTING)

After the first edition of the Preflight Study Manual had been printed, it was discovered that a number of errors had been made in the process of its preparation. Also, certain statements required revision in light of events which had transpired after the text went to press.

There follows a list of corrections to which CAP instructors should refer before teaching the various sections of this Manual:

Section and page

2-1 The Services of Supply are now called The Army Service Forces.

2-1 The definition of the Army Ground Forces should be revised as follows: "The Army Ground Forces, as they are called officially, include as basic arms, the Infantry, Cavalry, Field Artillery and Coast Artillery."

2-1 The Quartermaster Insignia opposite the paragraph "Services of Supply" is not correct and should be removed.

2-8 There are now 16 air forces instead of 15. The latest, designated the 20th, is a global air force available for operations wherever needed.

3- Text, photographs, and silhouettes of the B-29, P-61, P-63, and A-26 were prepared for the section, "How to Spot Planes in a Flash". However, at the time the Manual went to press, all four airplanes were still in a confidential classification. It was not until it was too late to include this material in the Manual that the War Department released information about these airplanes to the public. It is suggested that instructors encourage students to find pictures of these airplanes and familiarize themselves with the salient features of each, in addition to studying the airplanes described in the Manual.

5-28 Niner instead of Ni-yen.

6-20 The last word in the third line above the subhead, carburetors, should be "superchargers".

6-20 In the second column, on the line immediately below the diagram of the ignition system, the sentence should read "low-amperage, high-voltage current".

6-24 The diagram on blue background illustrates an oil temperature gauge, but not one which operates by vapor pressure. The one shown is electrical, operating on the principle of the sensitive element.

7-15 The drawing of Stable Air Condition is not quite complete. It should show the parcel of air rising to about 1800 ft. and there halting, at a temperature of 80°. Arrows should turn downward at that point, indicating that the air rises no further; rather, tends to drop.

10-3 In the right hand diagram at the bottom of the page, the artist made the center sector appear wider than the others. This is a mistake, of course. All such sectors are exactly the same size and no two meridians in this projection are parallel. Make it clear to your Cadets that the lines of longitude and latitude within the red border are the same as those depicted in the center drawing.

10-4 The two outline drawings of U. S. are correct, but the parallels of latitude are not correctly drawn. As you know, the northern border of the U. S. from the Pacific to Lake Superior exactly coincides with a parallel of latitude.

10-5 Explain to your Cadets that the aerial photograph, in relation to the part of the aerial chart within dotted white borders, illustrates Point 4 at the top of the page.

10-7 The grid used on the colored drawing of the globe unfortunately is incorrect in relation to the land masses shown. The equator in in the wrong place and the point 30° N, 60° W, is incorrectly located. It is best to ignore this drawing and use a desk globe to illustrate how to find specific points on the earth's surface in terms of latitude and longitude.

10-8 In the second line above the drawing in the first column, the text should properly read "parallel to the nearest meridian".

10-10 The colored symbol illustrating Intermittent Lake should not be solidly filled in. The surface of the lake should be crossed by dotted diagonal lines of blue. Also, explain to the Cadets that the border of the Dry Lake should be a dotted blue line. The symbol for a town of less than 1,000 population should not have a yellow center.

10-11 The symbol for radio marker beacon should show the circle filled in with pink.

10-12 Theysymbols at the top of the page are not quite complete. The oval in the Fan Marker Beacon symbol should be filled in with pink. The box should contain a place name, such as Burlington or Sandusky. In teaching these particular symbols, refer to the R-5 Oklahoma City sectional chart rather than the Manual. In the second column, the drawing of the airspace reservation should be in red rather than black. Here again, refer to R-5 sectional chart rather than the Manual. Also, the symbols for High Explosive Area should be in red.

10-15 To make the example conform with the latest type compass card (illustrated), change the 4th and 5th lines of the second column in this manner: "Your compass card indicates: For the nearest bearing (270°): M to C, +1." Then change the figure opposite Deviation to +1° and the figure opposite Compass Course to 269°.

10-20 In the first line of point 3 in the second column, the text should read "Move horizontally to the left". Omit the words "right or".

10-21 and 10-22 After the first printing of the Manual had been made, it was discovered that not enough of the Type D-3 Navigation Computers were available. Therefore, most of the CAP Cadets will receive the newer and more advanced Navigation Computer, Type D-4, an explanation of which follows:

HOW TO USE THE NAVIGATION COMPUTER, TYPE D-4

The D-4 Navigation Computer, which is also given to every Aviation Cadet at the start of his flight training, is a simple computing device which saves a great deal of time and effort. It helps solve time-distance problems, figure true airspeed from indicated airspeed, correct altimeter readings, and change statute miles to nautical miles and kilometers. It has scales printed on both sides.

The Time-Distance Side

On the time-distance side of the computer the outer, stationary scale, when used to work a time-distance problem, represents distance. (It is like a slide rule in that the figures have no decimal point. For instance, the figure 15 can represent .15, 1.5, 150, 1500, etc.) The inner, movable disk has two rows of figures and markings. For time-distance problems, they both represent time. The large arrow, marked MPH, is at the 1-hour mark. (Note that, in some cases, the spaces between figures are divided into 10 parts; in other cases, they are divided into 5 parts.)

Here's how you work a problem in time and distance: Suppose, for example, the distance between your point of departure and destination is 300 miles. Your groundspeed is 150 mph. How long will it take to get to your destination? Of course, you can figure this in your head. But work it on the computer.

Set the (MPH) arrow to 15 on the outer scale. That figure, in this instance, represents 150 miles. Now, look below the figure 30 on the outer scale. Immediately below it is 12. That represents 120 minutes. Below 12 is 2:00, representing 2 hours.

Suppose, to take another example, you know how far you've flown and how long it has taken you to do it, but you don't know what your groundspeed is. Let us say you have flown 240 miles in an hour and a half.

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To find your groundspeed, set the figure 9 (representing 90 min., or 1½ hours.) on the inner scale opposite 24 (representing 240 miles) on the outer scale. Opposite the MPH arrow is your groundspeed, 160 mph.

Altitude Correction

The time-distance side of your computer has another use. In the section of this manual called "What Makes An Airplane Fly", you are told how changes in barometric pressure and temperaturescan make an altimeter read incorrectly. On the time-distance side of the D-4 computer you can find corrected or true altitude from the altitude which the altimeter indicates. To do this, set the figure for indicated altitude against the figure for temperature at flight level in the window of the computer.

For example, we'll assume your indicated altitude is 10,000 ft. and the temperature is -20°.

To find your correct altitude, first set the figure 10 on the Press. Alt. scale opposite -20 on the Air Temp. scale in the computer's window. Now, look above the figure 10 on the edge of the movable disk. You read 94 on the outer scale. In altitude correction problems, both these scales represent feet. The figure 10 stands for 10,000 ft.; the figure 94 represents 9400 ft. In this particular problem, that is your true altitude. The temperature of -20° at 10,000 ft. is lower than normal; therefore your true altitude is less than the altimeter indicates.

Let's try another example: Your indicated altitude is 8000 ft. and the temperature is +20°. To find your true altitude, set 8 on the Press.Alt. scale opposite +20 on the Air Temp. scale. Now, look above the figure 8 (for 8000 ft.) on the edge of the movable disk. You read 86 (8600 ft.). In this example, the actual temperature at 8000 ft. is above normal for that altitude. Accordingly, your true altitude is greater than the altimeter indicates.

Changing the Scale of Miles

On the time-distance side of the computer, you can solve still another kind of problem. For instance, you can change nautical miles to statute miles or kilometers, and vice versa. You do this with the help of the three small arrows on the edge of the computer's movable disk. The kilometer arrow, marked KM, is right beside the large MPH arrow. The Nautical (NAUT.) and statute (STAT.) arrows are left and right of 35 on the same scale.

Here's an example: 100 nautical miles equal how many statute miles or kilometers?

Set the NAUT. arrow to the figure 10 (for 100) on the outer scale, which, in this kind of problem, again represents distance. You find how many statute miles this equals by looking above the STAT. arrow. It points half-way between 11 and 12 on the outer scale. Call it 11.5 and read it as 115. The KM arrow, meanwhile, points to a spot a little more than 2 lines beyond 18 on the outer scale. Call it 18.5 or 185. To sum up, 100 nautical miles equal 115 statute miles or 185 kilometers.

Let's try another example: 220 kilometers equal how many statute miles?

Set the KM arrow to 22 (representing 220) on the outer scale. The STAT. arrow points to 13.7 (representing 137. Note that the NAUT. arrow points to 11.9 or 119. To sum up, 220 kilometers equal 137 statute miles or 119 nautical miles.

The Airspeed Side

The airspeed side of the D-4 computer is used to determine true airspeed from indicated airspeed. The outer, stationary scale represents calibrated airspeed. For purposes of this course, this is the same as indicated airspeed. The pressure altitude scale, which for purposes of this course, is the same as indicated altitude, is on the inner, movable disk. True airspeed is read through the window of the inner disk.

This is how you work a problem on the airspeed side of the computer:

Suppose your indicated airspeed is 160 mph., your altitude is 10,000 ft., and the temperature is 0°. You want to find your true airspeed.

Set your altitude (10 on the Pressure Altitude scale) against 160 on the outer scale. Now, in the window, opposite a temperature reading of 0° on the Air Temp. scale, you find your true airspeed, 187 mph.

On the same side of the computer, you see a Density Altitude scale and another air temperature scale. These apply only to certain problems, involving extreme altitudes and high speeds, which are not required in your course.